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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/600,710

06/23/2003

Shigekazu Nagai

CS-22-030623

5749

22712

7590

02/21/2006

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ARLINGTON, VA 22202

EXAMINER

KRAUSE, JUSTIN MITCHELL

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/600,710

Applicant(s)

NAGAI ET AL.

Examiner

Justin Krause

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4 and 7-10 is/are rejected.
- 7) ☐ Claim(s) 5 and 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to amendments filed December 13, 2005, claim 2 was cancelled, claims 1 and 3-10 are currently pending.

Claim Rejections - 35 USC § 102

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claim 1, 3, 8 and 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Lear (US Patent 2,403,092).

Lear discloses an electric actuator comprising:

-A main body unit (A,H)

-A rotary driving source (M) which is connected substantially in parallel to an axis (Fig 1) of said main body unit and rotated in accordance with an electric signal

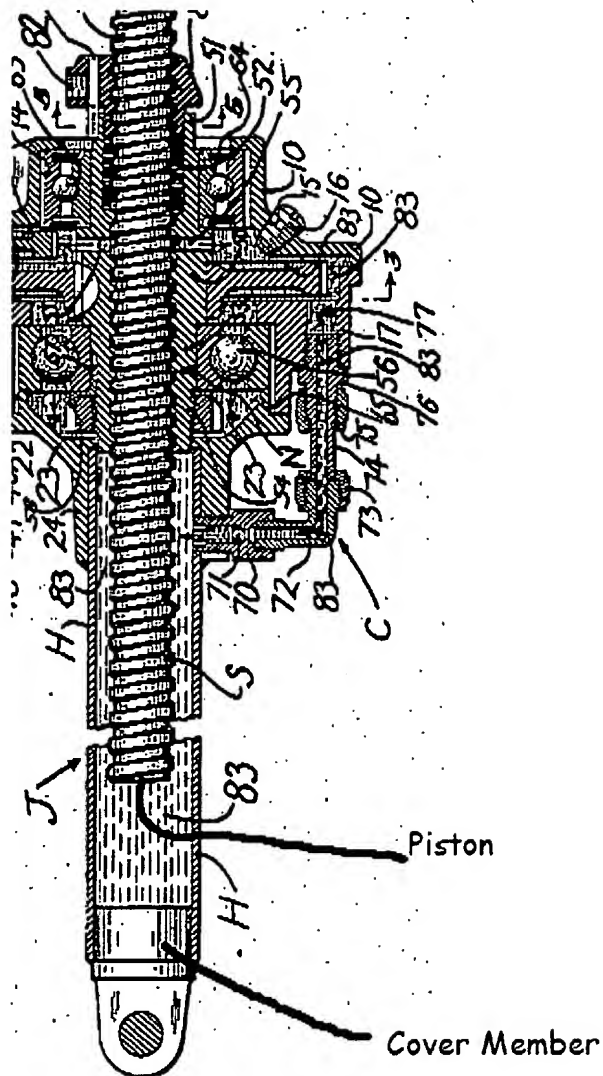
-A gear mechanism (G), which transmits rotary driving force of said rotary driving source

-A feed screw mechanism (N, S), which converts rotary motion transmitted by said gear mechanism into rectilinear motion and which includes a feed screw shaft (S) provided movably back and forth within said main body unit and projecting outside of said main body unit

-said feed screw mechanism including a feed screw nut (N) which is externally fitted to said feed screw shaft to be meshed with said gear mechanism and

which is integrally formed with a gear section (37) having a plurality of teeth arranged circumferentially about said gear section

-wherein said main body unit includes a tube member (H) and a pair of cover members (23 or 80 and the plug on the left side of tube member H, see image below) and a piston (enclosed end of S, see Col 2, line 40-Col 3 line 5, image below) which is slidably displaceable along an inner wall surface of said tube member, is connected to an end of the feed screw shaft. The feed screw shaft acts as a piston, so the piston is inherently connected to the feed screw shaft.



Regarding claim 3, the main body unit is provided with a cushion mechanism which absorbs shock exerted on said piston. The lubricant reservoir inherently acts as a fluid damper, cushioning the piston.

Regarding claim 8, a first bearing (56) and a second bearing (63) are arranged at one end and the other of said feed screw nut.

Regarding claim 9, the gear section is provided on a circumferential surface of an annular projection, which is integrally formed at a central portion of an outer circumferential surface of said feed screw nut.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lear.

The cushion mechanism is provided with cushion chambers (H and A), which are compressed by said piston, said cushion mechanism has cushion valves (71), which adjust the rate flow between the chambers.

Lear does not disclose air being vented to the atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize air as a cushion instead of a lubricating fluid as a change of fluid to air would still provide a damping cushion as the lubricating fluid provided.

The ventilation to the atmosphere as opposed to another chamber is also an obvious modification, so long as the pressurized fluid is moved to a chamber not affecting the movement of the piston. In Lear, the fluid is pushed to a chamber within the gear housing, which does not affect the piston travel.

4. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Lear.

Lear discloses a first gear (33) and a second gear set (34, 36) coupled to the same shaft (35), said first gear is coaxially connected to a rotary driving shaft of said rotary driving source disposed in parallel to an axis of said feed screw shaft, said second gear provided between the first gear and the feed screw shaft, teeth of the second gear meshed with teeth of the first gear (34 meshes with 33) and said gear section of said feed screw nut meshes with said teeth of said second gear (37 meshes with 36).

By placing both intermediate gears (34, 36) on a single shaft, both gears function as a single gear, but produces a different gear ratio by utilizing 2 different sized gears on a single shaft. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the intermediate gears into a single gear and set the size of the gears according to the desired gear ratio.

5. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lear in view of Scavini (US Patent 3,053,104).

Lear shows claimed subject matter as described above.

Lear does not show a piston having a polygonal shaped cross-section that slides along the inner wall of the housing body of the same cross-sectional shape as said piston, preventing the piston from rotating.

Scavini shows a screw and nut device with a guiding piston having a splined cross-section. The piston (13) has splines (14), which follow grooves (15) in the housing walls to prevent the piston from rotating with respect to the housing (Col 2,

lines 57-62). A piston having splines about its exterior surface would possess the cross-sectional shape of a many sided polygon.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the teachings of Lear and Scavini and restrict rotation of the piston by having a piston of a polygonal cross-sectional shape fitted into a similarly shaped housing. The piston of Lear is also restricted from rotation, but is done so by fastening the free end of the ball screw to the structure being actuated by the mechanism.

Allowable Subject Matter

6. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

8. With respect to the argument regarding "substantially in parallel" on page 10 of applicant's response, the rejection under 35 USC 112, 2nd paragraph is withdrawn. All other amendments made under rejections to 112, 2nd paragraph are accepted.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Krause whose telephone number is 571-272-3012. The examiner can normally be reached on Monday - Friday, 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMK
2/15/05



RICHARD W. RIDLEY
~~PRIMARY EXAMINER~~

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